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An International Convention

Last week we spent as much time as we could spare at the first International Congress on vitreous enamelling. Organised by the Institute of Vitreous Enamellers, it was in every way worthy of being called international. The over-all attendance we judged to be about 250, of whom about 50 were from overseas. The meeting was characterised by the attention given to the enamelling of sheets to the virtual exclusion of cast iron. Moreover, there was a clear-cut division in the nature of the Technical programme, for theory predominated in the straight technical Papers, whilst the two technical committee reports on welding and cleaning were severely practical.

We took the opportunity offered to us by this occasion to ascertain whether cast iron was or was not losing ground to sheet iron and steel pressings. There was no unanimity in the answers received. There have been cases cited where ground has been recovered, but analysing the various opinions, it would seem that the proportion is much the same as in pre-war days. Technologically, cast iron has made progress, inasmuch as that, with a deterioration in the general level of raw materials, this section of the industry is delivering components of a quality comparable with pre-war production.

Naturally, it being an international gathering, informal conversations often touched upon international trade. Here we had confirmation of a situation of which we have for some time been aware. It seems that foundry owners in overseas countries are on the horns of dilemma. They are devoid of dollar exchange with which to purchase American foundry plant, but, finding that the machines are also made in Great Britain and moreover, that they can utilise sterling for their purchase, they open up negotiations with British manufacturers. Then they discover that, through agreements, the British makers have no right to sell in the country from which the enquiry emanates. Surely, the American foundry equipment industry, by temporarily waiving their unquestioned rights, would be doing much good for the world's foundries.

It was not pleasant to hear adverse comment from overseas visitors on the establishment of a British-American employer/trade-union committee to co-operate on production problems. It seems that up to the announcement of the establishment of that committee, these foreigners were satisfied that British production methods were the "cats whiskers" within the limits of our economic and industrial set-up. They rightly regard the new activity as bad propaganda.

The Conference, as is usual with such affairs, included a round of social functions and works visits. The organisation was excellent, and special praise is due to Mr. W. Thomas, the Honorary Secretary, for, unlike the older and larger institutes, that of the Vitreous Enamellers does not as yet carry a professional secretariat. During the Convention, the Presidency was changed, and Mr. R. J. Rogers, after a particularly successful period of office, relinquished his chair to Dr. H. W. Webb. The Presidential Address was as startling as it was novel. To hear that really large-scale industrial research gave results superior to those emanating from co-operative efforts was indeed thought provoking. In this Institute, the duties of the president are somewhat lightened by taking advantage of the services of the chairman of the Council. This year, that office is held by Mr. C. P. Stone, whose summaries of the discussions were particularly praiseworthy. It was very courageous of the Council to stage an international conference at this particular time, but the results achieved have more than justified their aspirations, and success has crowned their efforts.

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Mobile Publicity

All crossword puzzle addicts are well aware that the letter "I" and word "one" are synonymous. This relationship has been used to good advantage by Allied Ironfounders, Limited, by the creation of a circular emblem carrying the letters AI, which can be read either as the initials of the company or Lloyd's famous cachet of quality. Thus AI is to be found everywhere in the Exhibition Train which, starting from Paddington, will visit 26 of the largest cities and towns in the country. It is a magnificent train, beautifully decorated, and shows up to advantage the modern cooking and space heating stoves this great manufacturing concern now produces. The sole criticism we have to make of the exhibits is that not all the ovens carry rounded corners, as in the housewife's opinion they should. One compartment is a small cinema. The train was built in 120 days on the sidings serving British Baths, Limited, Greenford.

The appeal is addressed to two sections of the community—the housewife and the professions serving the building trades. To the former, the film does make a serious appeal to utilise, both in a selfish way and in the national interest, modern heating and cooking apparatus. The film is introduced by Mr. W. T. Wren, the director in charge of sales, who, if he were not so obviously the right man in the right place, would make a name for himself in the cinema world. The two points well emphasised by the film are national fuel conservation and lightening the duties of the housewife.

The trade literature available on the train is also of two types and one makes a popular appeal, whilst a second is designed to interest the professional type. Both are equally good in their respective spheres.

The Exhibition Train is the finest piece of publicity ever staged by the foundry industry, and readers should make a special effort to inspect it when it comes into their area.

Publication Received

A Simple Guide to the Basic Processes in the Iron and Steel Industry. Published by the British Iron and Steel Federation, Steel House, Tothill Street, London, S.W.1.

It is not easy to make the basic principles of iron and steel manufacture clear to the schoolboy, and still retain technical accuracy. Yet it has been excellently done in this 60-page booklet, which, in three sections, logically covers the major factors from the coke oven to forging. Rightly there is no mention of the crucible process, but electric melting is adequately described but not quite so well illustrated, so far as the electrode furnace is concerned. Too much of the furnace is masked by anciliary equipment, and the replacement by a simple line drawing would be advantageous. The other illustrations are uniformly good, whilst some indeed to the youthful mind would be inspiring. The reviewer congratulates the anonymous compiler on the admirable way in which he has carried out his task.

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

OCTOBER 12.

Institution of Production Engineers.

Halifax Section:—"Precision Castings for General Engineering Purposes," by F. Hudson, at 7 p.m., at Whiteley's Café, Westgate, Huddersfield.

Birmingham Graduate Section:—"Die-casting," by H. W. Fairbairn, at the James Watt Memorial Institute, Great Charles Street, Birmingham, at 7 p.m.

OCTOBER 12 and 13.

Convention on High Vacua.

Under the Presidency of Sir Charles Darwin, K.B.E., M.C., at Gleneagles. Paper by R. A. Stauffer, "Application of High Vacua to the Metallurgical Industry," included in programme for October 13.

OCTOBER 13.

Institute of Welding.

North London Branch:—"Thermit Welding," by A. Baines, at the Enfield Technical College, at 7.30 p.m., preceded by a short film.

Institute of Vitreous Enamellers

Southern Section:—"My Ideal Enamelling Plant," a symposium at the Bonnington Hotel, Southampton Row, W.C.1, at 7.30 p.m.

OCTOBER 14 and 15.

Aachen Foundry Colloquium.

At the *Huttenmannisches Institut* of the Aachen Technical High School. Details printed in the JOURNAL, September 16.

OCTOBER 14.

Institute of Economic Engineering.

North-East London Section:—Informal Discussion at Pimm's Restaurant, Bishopsgate, at 7 p.m., on "Specialised Internal Transport."

Institute of Vitreous Enamellers.

Midland Section:—"Raw Materials for Enamels," by Mr. Abbott, at 7.15 p.m., at the Chamber of Commerce, New Street, Birmingham.

OCTOBER 15.

Institute of British Foundrymen.

Birmingham Branch:—Presentation of the "Garrett Report," at the Wolverhampton Technical College, Wolverhampton, at 7 p.m.

Middlesbrough Branch:—"Heat Resisting Steels," by F. H. Keating, at the Cleveland Scientific and Technical Institute, Middlesbrough, at 7.30 p.m.

West Wales Section:—Sound film, "A.1 at Lloyds," at the Glanmor Foundry Canteen, Llanelly, at 7 p.m.

British Standards Institution

The monthly information sheet for August lists under "New Standards Issued," B.S. 1121, Part II, 1948: Methods for the analysis of steel, carbon in steel and low-carbon ferro-chromium (1s.); B.S. 1449:1948, Steel plate, sheet and strip (2s. 6d.); and B.S. A.23:1948, Equipment and method for long-period, high-sensitivity, tensile creep testing (1s.). Under the heading "Amendment Slips Issued," there is PD 809, Amendment No. 2 to B.S. 1430:1947, Aluminium rainwater goods—cast and extruded. "Future Publications" includes B.S. 1121, Part 6, 1948, Methods for the analysis of steel, Nickel present in small amounts in carbon and low-alloy steels (1s.); B.S. 1121, Part 8, 1948, Methods for the analysis of steel, Chromium present in small amounts in carbon and low-alloy steels (1s.) [We understand this has since been issued]; B.S. 1195:1948, Kitchen fitments and equipment (4s.); and CP 324.301: 1948, Selection and installation of domestic electric cookers (2s.). Amongst "Draft Standards Circulated for Comment," there is quoted CJ 8067, Glossary of terms used for solid-fuel burning and allied appliances.

The Institute of Vitreous Enamellers

International Congress and Annual General Meeting

The first International Conference of the Vitreous Enamelling Industry and the Annual General Meeting of the Institute of Vitreous Enamellers was held from September 27 to 30 at the Piccadilly Hotel, London. It opened with an informal dinner given by Mr. R. J. Rogers and the industry to overseas guests. These numbered about 50, the largest delegations being from France and Sweden. Other countries represented were Belgium, Holland, Italy, the U.S.A. and Australia.

The conference proper was opened on Tuesday with technical sessions both morning and afternoon. Papers by Dr. Crussard (France) on "The Creep of Glass and Enamel at Fusion Temperature" and by Dr. J. M. Stevels (Netherlands) on "Some Chemical Aspects of the Opacification of Vitreous Enamels" were presented. In addition there was a Report from the Welding Sub-committee, presented by Mr. H. McNair. In the evening there was a supper dance and cabaret at the Café Royal, at the inception of which, Mr. R. J. Rogers welcomed the delegates.

The next day, Wednesday, there was a further technical session at which Dr. J. H. Partridge gave an address on "Some Physical Characteristics of Vitreous Enamelling," followed by the presentation of a Paper from the U.S.A. by Mr. W. Astles on "Lithium in Enamels." In the afternoon, the delegates visited the foundry and enamelling shops of R. & A. Main, Limited, of Edmonton. Here the guests were received by Mr. Marley, managing director, and were then shown the actual making of the frit, the mechanised moulding plant and the enamelling of gas cookers and their final assembly. The evening was spent at the opening night of "Ice Cascades" at the Stoll Theatre.

Annual General Meeting

This was held on Thursday morning, Mr. C. P. Stone presiding. The minutes of the last meeting were taken as read, approved and signed. The following were elected members of the Council:—Mr. Alaister McLeod; Mr. H. McNair, and Mr. V. Matthews. The other officers, with the exception of the president, were re-elected.

In conferring upon Dr. H. W. Webb the chain of office, Mr. R. J. Rogers said it was his pleasurable duty to invest his successor, Dr. H. W. Webb, as President of this Institute. Dr. Webb was known to most of the members and therefore it was not necessary to give very much time in introducing him.

Dr. Webb has had a very distinguished career; he was appointed in 1934 as principal of the North Staffordshire Technical College, Stoke-on-Trent, and head of the pottery department in succession to the late Dr. J. W. Mellor, F.R.S. Those who had been associated with the Institute since its inception would always remember the great services it received from that renowned scientist, Dr. Mellor, as the first President. It was not his intention to recount in any great detail the career of Dr. Webb. He had achieved considerable distinction in the ceramic world. He had written various research Papers, and was a member of a number of societies, including the Ceramic Society, the Chemical Society, and the Society of Chemical Industries. He had a great capacity for work, and a very fine understanding of the commercial value of technical and art training; he had developed technical training in the ceramic industry, and was now training thousands where 20 years ago it was only hundreds.

Apart from his business activities, Dr. Webb had found time in his life to take part in sport, and in his younger days he was quite renowned on the football and cricket fields. He served in H.M. Forces during the first world war, and in 1946 was awarded the O.B.E. for his services during the recent conflict. The prosperity of this industry of vitreous enamelling would depend more and more upon the degree of scientific control which was brought to bear on our every-day enamelling problems. The need for research also in the industry was becoming more widely appreciated, and in both these directions the new President would prove of the utmost value to the Institute.

The Institute was very fortunate in having a man such as Dr. Webb as President. It was his great pleasure, therefore, to relinquish office after two years and to know that he was handing his duties to a gentleman who would carry out those duties with great distinction, both to the Institute and to himself, and he had much pleasure, therefore, in investing Dr. Webb with the badge of office as president of the Institute for the ensuing year.

In reply, DR. WEBB said that he had noticed, in going round to various places and seeing him meet people in the industry, how highly they regarded Mr. Rogers, and it was clear that he must have carried the authority of the Institute into all sections of the industry with this human quality which makes it so much more acceptable, and he felt the first thing he ought to do was to express on behalf of the members their grateful thanks to him for the distinction he had conferred during his term as President and for the quality of friendship he had brought to the meetings and conventions. He hoped that he could follow him in some small way and that the comparison would not be too obvious as time went on. It seemed to him rather a pity that, because of the rules, the Institute has to lose a President like Mr. Rogers.

He asked members to indicate their very great admiration and thanks for what he had done for the Institute during his term of office.

Presidential Address

After Mr. Rogers had acknowledged the vote of thanks, DR. WEBB then delivered his Presidential Address, in the course of which he said:—

Your Institute has a wise custom in asking its potential president to serve a year beforehand as vice-president

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to get to know the ropes. I have just completed this period of instruction, or should I say incubation, which may describe more accurately the process of getting to know some members of your Council? The year has been a pleasant and interesting one. I have learned that one is liable to be called to meetings, many miles from one's working place, at which a good deal of useful work is being done. I have been impressed by the unselfish way in which members of your Council and committees give so much of their time for the good of your industry. I have also learned something of the quality of friendship of your Council. So much so that I am looking forward to a happy year of office in association with them. It will be a year, I am sure, in which there is much to be done. We are nearing the end of the seller's market—a dangerous industrial phenomenon which is very rare—in this country at all events. I say a dangerous phenomenon because it can be like a narcotic in its action and deaden the senses which should be actively concerned with new ways to efficiency. It may cause us to regard quality as something we will put right to-morrow; mounting costs of production do not seem nearly so frightening because, after all, we can usually pass them on to the consumer. Even when we are aware of all these dangers and quite clear in our own minds we are not going to fall into the trap, it is nevertheless very difficult to keep oneself alert, and fighting, without the incentive which comes from having to fight for markets.

From what I have seen of it, I am sure your industry is very much aware of these dangers and is taking steps to bring its production to the maximum state of efficiency. One very obvious sign of this is the interest you and your Council are showing in the development of research work related to your particular industry.

Relative Importance of Industrial Research

I propose in a few minutes to say something more about industrial research in which I may claim to have had a good deal of experience. But before I do so, I want to try and get the contribution research can make to your increased efficiency into the right focus. The businessman has heard and read so much about research that he is apt to think it is the panacea of all ills and, once an industry has begun co-operative research, someone will bring a marvellous discovery out of the bag and everything will be all right. Nothing could be further from the truth. Research work is certainly one method of getting help, but do not let us overrate its importance. You know, in a fundamental sense, research is an attitude of mind, and I want to bring a research mind to your industry for a few minutes. Let us suppose you wish to bring your business to a high level of competitive efficiency—what are the most important things you must look to? First, I would place management. Every good director of a business tries to organise a production team with the right personal qualities and trained for their job, from operatives to managers. You see, I have put this in front of organised research. As a matter of fact, if your training is right, you bring a whole team of research minds in the production sense into operation on your plant. I also used the phrase "if your training is right." It is so often the case that the man I spoke about a few moments ago believes that the only place to train personnel is in the factory, a process we refer to rather facetiously as "stewing in your own juice."

It is true that training in the factory is essential, but if *all* the training is in the factory, it can be very inefficient in its final result. But there is no time to-day to talk about training. Before I leave the subject of management, however, I want to mention directors. These are popularly supposed to be middle-aged gentlemen who have grown a bit tired of doing active jobs and because of their previous service are permitted to draw a high salary for decorating an office from 10 a.m. to 4 p.m. with a two-hour interval for lunch! In fact, they are men on whose foresight and judgment often the future of the works depends. I mention them because they have some important help to contribute to efficient reconstruction. One of the obvious dangers of reconstruction is to over-estimate the potential size of your market. It is being done every day. Some economists try to persuade us that markets expand indefinitely as the cost of production goes down, a plausible fallacy when applied to an industry, and only partly true for an individual factory. They must also decide the extent and method of capitalising the reconstruction.

Marketing Conditions

If we put a team of trained personnel as the first objective, what is the second in importance? Here I put marketing. I have heard the figure given that on the average in this country the price at which goods reach the consumer is 75 per cent. greater than the selling price at works where goods by-pass wholesaler and retailer. During the whole of the post-war inflationary period we have remained disciples of the god of the percentage. If the wholesaler previously had 15 per cent. on our selling price and the retailer 60, then they must continue to do so, although costs of production may have doubled and while the cost of their service has not increased to anything like that extent. Every increase in labour cost at a factory, which increases the cost of production, is passed to the consumer, plus 15 plus 60. We should glory in making a 10 per cent. overall improvement in efficiency on a factory, but I wonder if we are equally glad to know it is passed on to the consumer, less 15 less 60? We sometimes permit wasteful and inefficient selling and distribution methods which I have not time to deal with, but above is the second important point for the research mind. What, then, is the third? Here I should put the question of layout. The saving of time and labour, the easy flow of goods through the production shops, the immediate checking of low quality and waste. All these come from using trained people with ideas and going to other industries for help in matters where they are more experienced. And at last I can put in research work—fourth in order of importance.

Research Work

I want to discuss research work on the assumption that you are laymen, and hope that the distinguished

research workers present will forgive me. Research work can be divided very roughly into two types—fundamental research and applied research. There is no sharp line of division between them. Broadly speaking, fundamental research is carried out to discover structure and properties (and the laws governing them) of matter as we know it. In so far as it aims at the elucidation of one or other of these, it can be said to have an objective, but it has no immediate industrial objective. Mostly it is carried out at the Universities in this country. Applied research, on the other hand, has an industrial objective and is consequently based in part on commercial considerations. It may involve some fundamental research, but all the lines of research are co-ordinated to bring a solution to the particular problem in view. In fundamental research a solution cannot be guaranteed. In applied research a solution can usually be guaranteed, even though it be a negative one. Let me illustrate these remarks by an example. We may attempt to discover the cause of a colloidal sized particle taking on an electric charge of a particular sign when suspended in water. We cannot guarantee to find the answer and there is no particular industrial objective in setting about this problem, although we can hope vaguely it will be of some use some time or other. On the other hand, we may set out to find the effect of the grain size of enamel on pick-up. Here we can guarantee to find an answer of some kind, and the objective is purely industrial. This type of research is sometimes called the pot-boiler for obvious reasons. and the wise research director keeps a certain balance between the pot-boiler problems and the fundamental research.

I am sure you will realise that applied research can have many different types of objective. It may be directed, for example, towards creating a new industry, which is probably its most valuable form. For example, we might put a team of scientists to investigate the synthetic production of linseed oil to cut out the expensive purchase of the natural product, or on methods of accelerating plant growth, and so on. If research programmes were subjected to direction in this country as they are in Russia, for example, such types of research would be given a prominent place. We may also have applied research designed to cut out labour, or save costs in other ways, by cutting down losses, control of materials and processes, and so on. If we think of such research in relation to a particular industry we must ask ourselves several questions—where shall it be done, who shall do it, how will it be financed, and what commercial results are we entitled to expect for the expenditure which is made

Co-operative Research

We have evolved in this country. largely as a result of two wars, a system of organised research in which the Government is a financial participant. I do not propose to discuss the various departmental and national research associations, but to limit my remarks to those co-operative research associations jointly financed by the D.S.I.R. and the industries concerned. There are now some 37 of them. Let me say first of all that I think we should give great credit to the foresight of those who as early as 1916 planned the build-up of organised research in this country. Let me also say to those who criticised so-called nationalised research, that the co-operative industrial research associations are given great freedom to run their own research associations in their own way and choose their own problems for development. Nevertheless, we are bound to ask ourselves whether this co-operative research structure encouraged by the Government is ever likely to be commercially efficient. Personally, I do not believe it can be. A far greater commercial return on research expenditure can be expected when sufficiently large industrial undertakings form their own research departments, in spite of the obvious criticism of overlapping and duplication. The reasons are not far to seek. Research carried out under such conditions is more objective, it is subject to constant stimulus and criticism by management interested in its results, and it is subject constantly to the acid test of practicability in relation to production. This implies that research work should be just as much the subject of competitive efficiency as commercial production in general, and I personally believe this to be true. If we believe that competition is necessary for industrial efficiency, it is difficult to find reasons for making an exception of industrial research. On the other hand, if we believe that nationalised (and rationalised) industrial production is an ultimately desirable objective, then a co-operative research association would have more to be said in its favour.

Private Research Organisation

It is impossible for me to speak for industry as a whole, but in those sections of industry I know best, the countries making the greatest progress in research application are not those with co-operative research systems but those with large units with well-organised research departments of their own. I know only too well how difficult it is to run applied research for an industry by a committee, whatever its representation; that it can be the case that a research association makes itself a post office for passing on the progress made by an efficient firm with ideas to the less efficient; that sometimes the research association is struggling not in the forefront but the rear of industrial progress telling the industry why it does certain things in a certain way. A director of research of a large co-operative research scheme is in an impossible position because so many fields of specialised science come into the picture that he cannot possibly direct research efficiently in all of them, and it is not usually possible to convert the ordinary graduates on the research staff into sub-directors because research direction demands a special type of brain and specialised knowledge in the forefront of a narrow field of science. In addition. the research director must have a detailed practical knowledge of industrial production and a strong sense of commercial possibilities. Consequently the efficiency of the system is usually very low.

Let us assume that the first step in research development is for industry to set up research departments of their own. I know the first point you will raise will be "What about those firms which are too small to carry a research department?" I cannot spend much

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time discussing this, except to say that first it would have to be very small to be in that position, and secondly if its turnover is really so small that it cannot afford a research man, then its commercial survival is due to some speciality of quality, design or management to which co-operative research will make little or no difference.

Combined Research

Supposing the great majority of members organise individual research departments, is there then any value in a co-operative research scheme? Here I think the answer is in the affirmative. Such a research association can be used to establish the basic scientific data for the industry and help to draw up specifications and standards, but the scope of its work should be carefully defined or it will result in wasted expenditure. It will be obvious to you also that individual factory research groups will form a better liaison with a co-operative research group than does a purely business management. You may ask, why is it so necessary to define the scope of work of a co-operative research association, and why should it result in wasted expenditure if it is not done? I can best illustrate this by an example. Let us assume you are interested in a one-coat enamel. If this problem be handled on a co-operative research basis for your industry, each of you contributes according to your turnover, let us say. At the end, if all goes well, the one-coat enamel becomes practicable, and each of you can make use of it according to your capacity. But looking at it from an individual factory's point of view, and remembering that our present economic system is based on competition and the survival of the fittest, do you feel your firm's contribution to the expenditure on the research has been justified, or would you rather have put up six times the amount yourself in the hope you could have solved the problem a bit faster and a bit better than one of your competitors? I know the answer is modified to some extent by whether you export a high proportion of your products or not, but in any case I will leave you to think out your own answer.

Raw Materials and Finance

Before I conclude I will refer briefly to one factor in your industry which makes your research problem a little more difficult. Many of you buy sheet iron for enamelling and frits to enamel them with, and you will naturally be anxious that research development will be applied to each of these products. How can you ensure this? Whatever solution you may find to your problem of research organisation must also take account of this factor. The answer does not lie in producing the sheet iron yourselves or even in making the frits yourself unless you are a very sizable concern; but you are entitled to ask that the industries supplying these materials at least take their share in research development.

Research has to be financed, like any other enterprise, and it is not cheap. It may involve a considerable capital investment before it brings in any returns. When you are beginning it is best to allocate a certain percentage of your turnover to research and treat it as a standing charge, in the same way as you might treat income tax. It is no use thinking of it in terms of subscribing £50 for this piece of research and £100 for that. Having decided the scale of your expenditure you must then decide if you will use it wholly or partly to create your own factory research organisation. If you decide on a co-operative scheme you will find a good deal of persuasion exercised to cause you to join one of the existing co-operative research organisations—after all, the bigger they are the more stable they are, and even Government departments have their pride! You will need to consider very carefully whether the active interest you feel to be necessary for your industry's particular needs will best be maintained in this way.

Balance Sheet

One final heresy before I conclude. Research for industry is a business and should be treated like a business and show a balance sheet. I can see some of my University friends lifting their hands in horror. But do not be misled by the talk of waiting for years and maybe for ever before you can expect to see some return for your money. The returns may not be quite as quick as on a marketable commodity, but they should be there in reasonable time. Do not accept the plea that your research men must be given special treatment and special privileges. The research man who will do good to your organisation, talks and thinks like any other business man. He is not the eccentric crank I find some business men expect him to be (and in consequence have their legs pulled by a humbug).

I have expressed a number of opinions, and whether you agree with me or not, I hope at least you will have found something to think about in what I have said.

May I have the pleasure of thanking you for the honour you have accorded me in adopting me as your President, and that of asking you to be good enough to extend to me the friendship which will be necessary to enable me to be of service to you.

Concluding Events

After the new president had been cordially thanked for his Address, the members heard a report of the Sheet Iron Cleaning Sub-Committee. In the afternoon a visit was paid to the works of Electrolux, Limited, of Luton. Here the delegates saw the complete details of the manufacturing of refrigerators. During the evening, there was the closing dinner and dance at the Piccadilly Hotel. A post-convention tour of the provinces for the benefit of the overseas delegates concluded a most successful and truly international congress.

At the August meeting of the Victorian Division of the Institute of Australian Foundrymen, Mr. J. D. Howie, of Steel Company of Australia, Proprietary, Limited, read a Paper on "Cast Iron for Enamelling." Prior to coming to Australia to his present position, Mr. Howie had experience in three plants in England doing enamelling work, and also spent a period in the Scottish laboratory of the British Cast Iron Research Association.

Problems of Contraction and Distortion in Cast-iron Castings*

Practical Application to Large Castings

By E. Longden, M.I.Mech.E.†

These notes constitute an addendum to previous work[1] on contraction and distortion in grey iron castings. The problems associated with volume changes during the cooling of cast iron from the point of solidification to ambient temperature are of particular interest to the founders of large or complicated castings, especially if of contrasting sections, although uniform sections do not necessarily ensure a satisfactory cooling gradient. Further studies of heat contents, heat transfer and heat conductivities of mould materials of various densities, depths and temperatures are needed to help to solve some of the underlying principles of cooling metals in sand moulds. In the meantime, as with most progress, it is from experience gained empirically that one must depend for guidance in solving the difficulies associated with the conflicting stresses generated in cast iron from constrasting sections, cooling gradients, and the influences of dual conditions of expansion and contraction which may operate simultaneously in a casting.

Theme Stated

The purpose of these notes is to advance, briefly, certain data and developments (for which the Author is responsible) which can be immediately put into practice to help in overcoming some very fundamental difficulties associated with the contraction of, in particular, ferrous castings carrying members with varying cooling gradients. The subject has been dealt with at greater length and detail in the 1948 I.B.F. Official Exchange Paper to the American Foundrymen's Association, but certain data and examples put before the Institute differ from those contained in the American Exchange Paper.

It is suggested that stress-relieving, as an after-treatment of a casting which has cooled down to, or nearly to, room temperatures, is limited in its application and much of it should be obviated by improved design. Designers can eliminate, to a great degree, many of the difficulties if they will design not only for the required mechanical strengths but also for a favouring, in their calculations, of the reduction of stress set up by the thermal behaviour of a casting cooling in a sand mould. Co-operation is necessary at the initial drawing-board stage. When the limits of design concessions have been reached, the foundryman will still be compelled to resort to certain expedients.

The information obtained from a study of the cooling behaviour of both simple and complicated large castings is put forward as helpful in solving contraction problems. The methods by which the records are taken are outlined.

It is considered that a noteworthy advance in controlling stresses in large castings is made possible by applying a system of air-cooling to those areas of a casting with a high initial heat content, or low heat conductivity. The application of air-cooling to the centre slideway of a machine-tool bed, during the cooling down period, introduces an example of the means to avoid destructive stresses. The application of air-cooling to relieve stresses at the best stage, *i.e.*, the cooling down stage, in a large variety of difficult castings is quite acceptable and may be widely practised with perfect safety.

A camber graph is included which, along with some generalisations on camber, will help in an understanding of the measures necessary to counteract distortion of certain ranges of castings.

Influences on Contraction

The influences which determine the behaviour of cooling cast iron sections of simple and regular form are:—

(*a*) Shrinkage of the fluid volume to the point of solidification, the shrinkage varying with the composition and initial temperature of melting and superheat at the point of mould filling;

(*b*) chemical and physical changes influencing the volume of the metal during the cooling down period;

(*c*) reduction in dimensions consequent on the normal diminution in volume when the metal cools from an elevated to ambient temperatures. In castings of complicated and contrasting section, or sections of unequal cooling rate, there are other influences which hinder and mask those stated in (*a*), (*b*) and (*c*) such as:—

(*d*) Designs introducing unequal and contrasting sections and machining additions to the casting;

(*e*) unequal cooling rates in spite of equal sections, because of the unequal rate of heat transfer through the various zones of the mould;

(*f*) unequal cooling rates of a casting due to the addition of runner and riser gates and feeder heads;

(*g*) hindered contraction from cores, enclosed sections of a mould and frictional resistance of the mould.

Foundry Technique to Overcome Contraction Stresses

The amount of contraction and degree of final distortion, it is seen, depends upon the design and its relationship to the physical and mechanical properties of the alloy and the influences inherent in the manufacturing methods such as:—

(1) Design, section and volume of the casting; (2) the class of alloy; (3) melting influences on the alloy,

*Presented at the London Conference of the Institute of British Foundrymen, June, 1948.

†Works Manager, P. R. Jackson & Company, Limited (David Brown Companies), Salford, near Manchester.

[1] E. Longden, Proc. Inst. Brit. F., Vol. 25, p. 95, and Vol. 33, p. 87.

Contraction and Distortion of Castings

superheat and pouring temperatures; (4) size, shape, location and distribution of the runner and riser gates and feeder heads; (5) character of the mould and core materials; (6) the method of making the mould and cores; and (7) stress-relief treatment during the cooling period.

In further elaboration of the foregoing factors it is suggested that:—

(1) Without due consideration of the complexity of the volume changes in cooling cast iron, the designer will be unable to render much help in relieving the founder of many of the obscure hazards of which the foundryman, himself, is not always too clear about. Designers should fully recognise that designing for a casting involves consideration of not just the working or mechanical strength required but, also, that of thermal stresses inherent in the cooling of a metal when poured into castings of contrasting section. The contrasts, he must also remember, are emphasised by the additions made to a casting for machining allowances. Sections of equal thickness or mass, are not necessarily correct from a casting point of view since certain areas of a mould will not transfer heat from the metal at the same rate as other areas.

(2) The class of alloy is often a compromise because cast-iron properties can vary so widely in a casting of contrasting section. Occasionally, conditions being favourable, it is possible to pour a casting with two classes of metal more favourable to respective sections. In such a case the running arrangements allow of a metal of close grain structure to be admitted, say, to the slideway of a machine-tool bed and then the filling of the mould to be completed with a much softer grade of metal through ingates located at a high level in the mould. This arrangement also favours a reduction in distortion and, consequently, in the camber allowances needed.

(3) Metal melted at a high temperature with adequate superheat and poured into a mould at a suitably high temperature will allow the mould to reach a more accommodating temperature than if poured at a low temperature. Thus, contraction and distortion tendencies are reduced somewhat.

(4) The admission of metal at a safe point, such as a heavy lower section of the casting, will not be favourable to the equalising of cooling rates or stresses. Flow-off risers can be suitably located, but for feed headers there is often no alternative.

(5 *and* 6) Much can be done to reduce contraction stresses if enclosed portions of the mould are constructed to yield to the contracting metal. Iron reinforcements to the sand should be carefully controlled and reduced to the minimum compatible with a margin of safety. Measures may involve the release by breaking away of the enclosed mould or cored areas. Or a section of a casting may be bared to the atmosphere so that its rate of cooling is accelerated and brought into line with the remainder of the casting.

(7) The heat-treatment of castings has been developed to release residual stresses so that subsequent failure from fracture and distortion may be reduced. Such heat-treatment involves subjecting a casting to between 400 and 700 deg. C., depending upon the class of alloy and type of casting. The rate of heating and cooling must be carefully controlled to avoid introducing destructive stresses in the casting, especially if it be of contrasting section. Stress-relief or heat-treatment is limited in respect to the class of casting, its size, economics, and a retention of the intrinsic properties of cast iron. Other well-known methods of relieving stress include ageing by "weathering," peening by hammer blows or steel shot, or by tumbling barrel.

It is reported that in America castings up to 100 tons can be seasoned in a few hours by the use of an electric apparatus which bumps the casting at the rate of 20 to 30 bumps per minute. The report goes on to say that the bumping vibrates the casting and settles the molecules of the metal in such a way that, after final machining, the casting shall better retain its

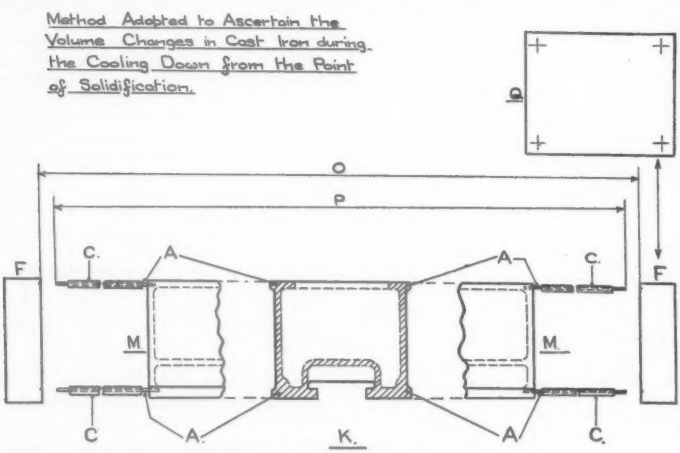


FIG. 1.—METHOD FOR FINDING VOLUME CHANGES IN IRON CASTING DURING COOLING.

K. Example—Lathe Bed.
A. Mild Steel Indicator Rods.
C. Indicator Rod Tube Housings.
F. Iron Weights Machined at X shown at Q.
M. Ends of Bed Casting.
P. Ends of Rods.
O. Dimensions Between Weights.
Movements Between Rods, A, and Weights, F, Indicates Certain Volume Changes in the Casting.

shape. The castings are rough-machined and then suspended from above by a rope or chain. The machine is set in motion and in a few hours produces a casting with considerably reduced residual stress. The application of this method, while affecting the rapid seasoning of the casting, does not change the tensile strength, elastic limit or other physical characteristics of the casting. It is stated that the apparatus is simple to use and needs little attention. It is a matter of simply plugging in at night and the casting is seasoned by the morning. It is thought that this development promises to relieve the foundry industry of much stress relief heat-treatment, which is both costly in time and in fuel charges.

Subsequent notes refer fully to a development by the author consisting of the application of a controlled air-cooling system applied to areas of a casting of high initial heat content, to relieve stresses during the cooling down period.

Cooling Behaviour of Castings

Test Procedure

The movements of a large complicated casting during cooling from the solidification point to room temperature need to be examined very carefully to avoid the many sources of error. Not all possible sources of error have been completely eliminated by the method outlined, but such errors which may remain are not of a major character and the main conclusions are based on quite sound premises.

The first method devised to record the changes in volume in cast iron during cooling is illustrated in Fig. 1, and it was found to be the most universally applicable on account of the many points of a casting to be checked. This method has been outlined in previous work and involves following the movement of the casting by frequent measurements between fixed points outside the mould and mild-steel rods held by the metal of the casting. Occasionally, an attempt was made to correlate temperature with the volume changes. A lathe bed is chosen to describe the principles of the controls applied.

Automatic Recording Mechanism

Fig. 2 illustrates automatic recording mechanism which was later specially designed to take care of extraneous thermal influences and to provide a check on Method I which was almost universally applied. As described in detail in Fig. 2, the instrument consists of automatic-clock recording mechanism housed in a strong, fabricated, steel casing welded to a substantial steel base and stress annealed. The pencil holder is shown at I, attached to the indicator rod, L, which is in turn attached by welding to the water-cooled pipe, N. The indicator rod, Q, on the casting, S, side is also welded to the water-cooled pipe, N. The short section of the indicator rod, Y, is welded to the main indicator rod, Q, after locating it in the lug, R, of the casting, S. The path of movement is indicated by the slots, W, and, again, the position XX before the casting movement during contraction and ZZ on the final cooling down of the casting. The diameter of the rod is constricted at the juncture, QY, to reduce the transfer of heat from the casting to the indicator rod. This

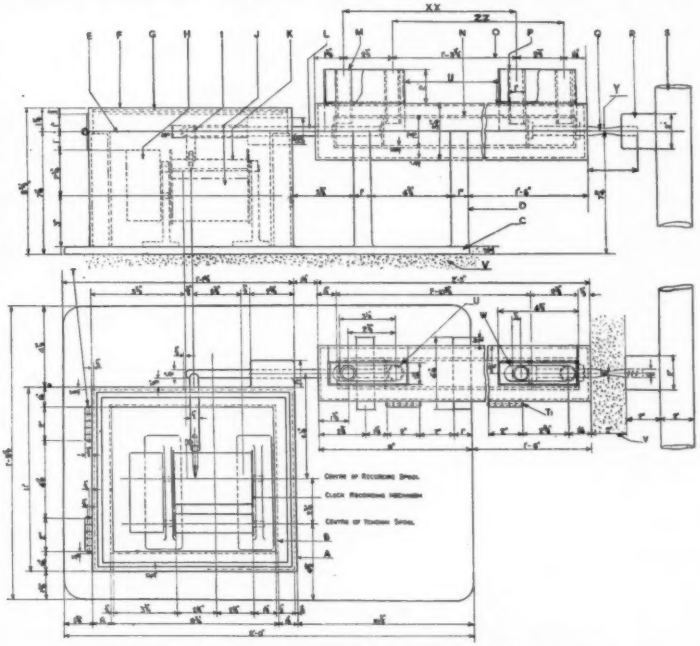


FIG. 2.—AUTOMATIC CONTRACTION RECORDING MECHANISM.

A. Outer Casing.
B. Inner Casing.
C. Base Plate.
D. Supports.
E. Bottom Casing.
F. Cover Frame.
G. Glass Cover.
H. Clock.
I. Pencil Holder.
J. Recording Spool.
K. Tension Spool.
L. Indicator Rod.
M. Water Outlet Pipe.
N. Water Cooled Pipe.
O. Outer Pipe Guard.
P. Water Inlet Pipe.
Q. Connecting Rod.
R. Lug on Casting.
S. Section of Casting.
T. Hinge (T_1 similar).
U. Loose Cover and Guard.
V. Insulation Material.
W. Path of Movemcnt.

Materials :—G. Clear Glass; H.J.K. Existing Unit; R.S. Metal of Casting; V. Diotomite Base; Remainder, Mild Steel.

Contraction and Distortion of Castings

section is also cooled by a stream of air from a compressed-air line.

Cooling Behaviour of Large Bar Castings

The graphs shown in Figs. 3, 4, 5 and 6 illustrate the cooling behaviour of large uniform-section bars in grey and white iron. Figs. 3 and 4 indicate the behaviour of grey-iron bars and Figs. 5 and 6 of white iron. The composition of the grey-iron bars is similar to the metal of a machine-tool bed, Figs. 7 and 8, to be described

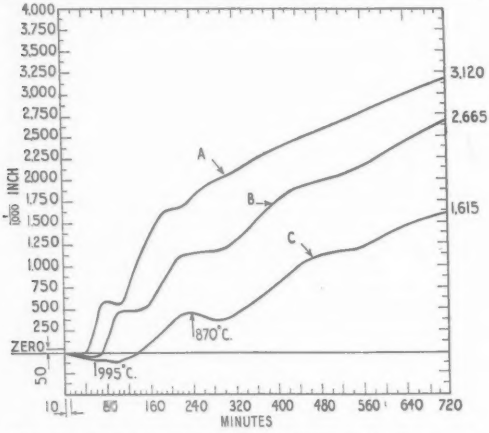


FIG. 3.—COOLING CURVES FOR GREY IRON BARS. A—1½ IN., B—3 IN., AND C—6 IN. INITIAL PERIOD.

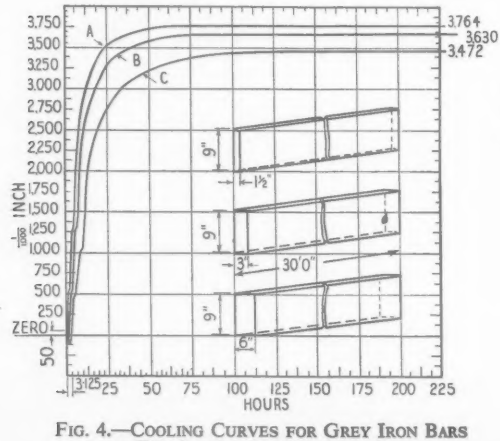


FIG. 4.—COOLING CURVES FOR GREY IRON BARS AS IN FIG. 3, BUT FOR COMPLETE PERIOD.

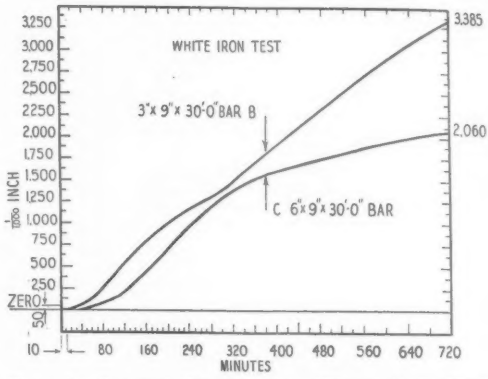


FIG. 5.—COOLING CURVES FOR WHITE IRON BARS. INITIAL PERIOD.

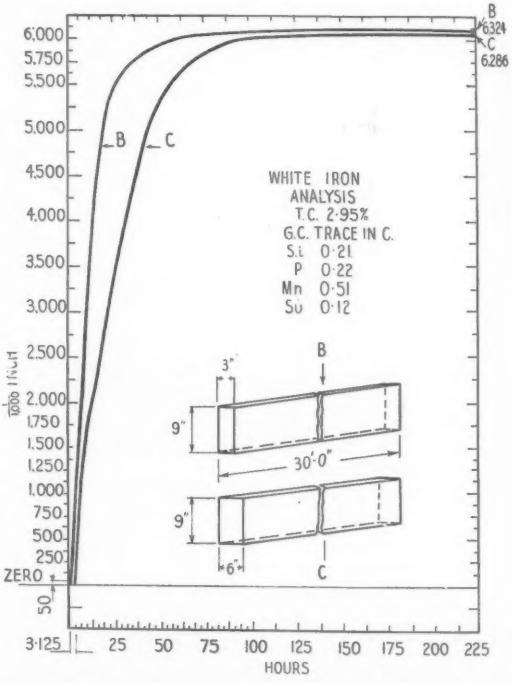


FIG. 6.—COOLING CURVES FOR WHITE IRON BARS. COMPLETE PERIOD.

later. The dimensions and compositions of the bars are as follows:—

Grey iron.		White iron.	
1½ in. × 9 in. × 30 ft.			
3 in. × 9 in. × 30 ft.		3 in. × 9 in. × 30 ft.	
6 in. × 9 in. × 30 ft.		6 in. × 9 in. × 30 ft.	
Composition.		Composition.	
T.C	3.23	T.C	2.95
Si	1.46	Si	0.21
P	0.62	P	0.22
Mn	0.78	Mn	0.51
Su	0.09	Su	0.12

Table I shows the volume changes in the grey- and white-iron bars during the cooling-down period from the point of solidification to room temperature. Table II gives the amount and rate of contraction.

The cooling curve of the 6-in. section grey-iron bar, Fig. 3, has recorded on it the approximate temperature obtained at two of the arrest points. The attempt to correlate temperature with the volume change points was not too successful. The temperature readings were taken at a point midway between the end and the centre

TABLE I.—*Arrests and Expansions During Cooling (Minutes after Pouring).*

	Grey iron (Figs. 3 and 4).			White iron.	
	A.	B.	C.	(Figs. 5 and 6).	
	1½ in.	3 in.	6 in.	3 in.	6 in.
First arrest ..	8 to 25	10 to 55	14 to 100	Not detected.	
Second arrest ..	65 to 110	100 to 145	180 to 300	240 to 340	330 slight
Third arrest ..	190 to 220	200 to 295	370 to 430	Not detected.	

of the casting. The three bars, 1½, 3 and 6 in., were poured simultaneously through top drop-gates centrally located in the castings. The temperature of pouring was recorded as 1,395 deg. C. The cooling behaviour was obtained by the aid of the two recording methods outlined in Methods 1 and 2, Figs. 1 and 2. The white-iron bars were treated in a similar manner as with the grey-iron bars, but temperature readings were not attempted. The 1½-in. bar failed to completely fill up the mould and was discarded.

(To be continued)

THE INTERNATIONAL HOUSING AND TOWN PLANNING EXHIBITION is to be held at Olympia from November 9 to 18. There are two main aspects of this extremely interesting exhibition. Not only is it designed as a trade exhibition but also as a centre for what promises to be the biggest convocation of experts interested in the theory and practice of town planning.

Notes from the Branches

Newcastle-upon-Tyne

The opening meeting was held in the Neville Hall, on September 11. On taking the chair, the President, Mr. S. Unsworth, thanked members for electing him to such an honourable position, and said it would be his honest endeavour to justify their choice during his term of office.

Initially, in his Address, he pointed out how important the craft of founding was to the community and the nation. Its history went back to early times, as is attested by many biblical references. A first-class patternmaker must have been available for the production of the fine artistic castings required by King Solomon for his temples and palaces.

The complex aspect now obtaining in the industry demands a higher appreciation of the theoretical and practical operation of the foundry. It is in this that the Institute did valuable work by putting before members Papers by specialists and promoting discussion of members' individual problems and their possible solutions. This dissemination of knowledge is of the utmost service, and particularly to the younger foundrymen. He urged members to become ambassadors in securing the adhesion of more firms to support the Institute and to induce more young foundrymen to join. Conditions in the foundry were vastly superior to those of past days; at the same time, however, he asked members to do all in their power to secure further amelioration of the amenities, more particularly in the direction of improved lighting, ventilation and minimising of dust and fumes, proper washing facilities and canteens. The basic importance of the industry to a variety of trades called for continued progress.

Value of Team Spirit

Attainment of smooth-running of a foundry could be best assured by team-work and the engendering of a family spirit by the management. This naturally required full co-operation between all concerned from bottom to top. Other requisites were: good planning; working in harmony; a good atmosphere, and the recognition of the human factor. Team-work is essential in view of the progress that science and mechanisation are making. The formation of consultative councils is a welcome indication of the present trends. A spirit of co-partnership should prevail in the foundry with full recognition of the human element, so that men will give of their best and develop and maintain an interest in their job. A prominent part in attaining this ideal rests with the foremen and supervisors who ought to keep in close touch with their men and develop a fellowship with them. Personality enters into the question here; if a foreman or supervisor has not been endowed by nature with this attribute, to find a good substitute is sound common sense. While good craftsmanship was the basis of success, he would advise closer collaboration between the engineer, patternmaker and foundryman in the designing of castings, as many of the difficulties that arise at a later stage would thereby be avoided.

(Concluded at the foot of Col. 1)

He considered the branch was doing excellent work in the dissemination of knowledge of founding, and those members who opened the discussions were highly appreciated. As an aid to full understanding of the craft, he counselled the reading of technical literature relating to the art and science of founding. He favoured having a Branch Library as being of great benefit to young members. Before closing he said that the achievements of the branch were in no small measure due to the work of the Branch Council—with the active assistance of their genial secretary, Mr. Charles Lashly. There was a good attendance at the of many complimentary individual comments.

Gazette

THE PARTNERSHIP BETWEEN Reginald Johnson, Thomas Orme and Leonard Henry Frederick Catley, carrying on business as engineers, manufacturers and platers at 93, Leopold Street, Birmingham, under the style of the Perfection Engineering & Plating Company, has been dissolved as far as R. Johnson is concerned.

THE PARTNERSHIP BETWEEN Harry Norman Whitehead and Fred Wilding, carrying on business as pressed-tool and pattern makers, textile engineers, etc., at West Hill Mill, Highfield Street, off Middleton Road, Oldham, under the style of H. Whitehead & Company, has been dissolved. Debts will be received and paid by H. N. Whitehead, who continues.

STANDAGE POWER COUPLINGS, LIMITED, is being wound up voluntarily, the purposes for which the company was formed having come to an end. Permission has been given to the parent company, S.P.C. (England), Limited, to use the name Standage Power Couplings, Limited, if it is so desired. Mr. N. Atty, William Park & Company (Forgemasters), Limited, is the liquidator.

THE PARNERSHIP BETWEEN John Stanley Mellor, 35, Chestnut Drive, Sale, Ches, Jack Richard Delaney, 34, Cranbrook Road, Gorton, Manchester, and Tom Greaves Corcoran, 10, Highbury Avenue, Flixton, Lancs, carrying on business as welding and general engineers, at 20, Brazennose Street, Manchester, and Cross Street, Pendleton, Salford, under the style of Delton Products Company, has been dissolved. Debts will be received and paid by T. G. Corcoran, who continues.

Stocks and Sales of Non-ferrous Scrap

The Ministry of Supply announces that the stock of scrap metals held by the Directorate of Non-ferrous Metals available for disposal at August 31 was 47,758 tons, made up as follows:—S.A.A. cases, 7,512 tons; copper and copper alloy, 11,014 tons; zinc and zinc alloy, 5,809 tons; lead, 3,837 tons; other grades, 19,582 tons.

Sales for the period June-August amounted to 17,941 tons, the approximate value being £1,350,000. The analysis was as follows:—S.A.A. cases, 2,780 tons; copper and copper alloy, 3,932 tons; zinc and zinc alloy, 1,644 tons; lead, 4,858 tons; other grades, 4,727 tons.

Material put out to tender during the June-August period amounted to 16,461 tons, of which 4,392 tons were lead. During the same period 12,400 tons were invoiced, the value being £1,044,335.

W. EDWARDS & COMPANY (LONDON), LIMITED, Lower Sydenham, S.E.26, announces that it is now producing two instruments which have not hitherto been available in this country. The first is a new sensitive vacuum switch for plant with high-tension electrical circuits. It operates between 15 and 500 mm. The second instrument is the "Flowtrol," which is used for the protection of water-cooled equipment by switching off electric power, sounding alarms, etc., when the water flow is inadequate or fails.

Plant Engineers' Conference

The principal speaker at the first annual conference of the Institution of Incorporated Plant Engineers, which is being held at Cheltenham Spa from to-day (Thursday) until Saturday, is Sir Percy Mills, who is speaking on "The Enlightenment of Industrial Management." Sir Percy is managing director of W. & T. Avery, Limited, manufacturers of weighing machines, etc., of Birmingham, and vice-president of the Midland Advisory Council on Industrial Productivity.

Other speakers include Dr. E. S. Grumell, chairman of the Fuel Efficiency Committee of the Ministry of Fuel and Power; Major Egbert Cadbury, joint managing director of Cadbury Bros., Limited, Bourneville, and J. S. Fry & Sons, Limited, Somerdale, Bristol, and Regional Controller, Ministry of Fuel and Power, South-Western Region; and Mr. C. Lacy-Hulbert, production director of Tube Investments, Limited. Mr. L. G. Northcroft, joint managing director of the Spirax Manufacturing Company, Limited, and Sarco Thermostats, Limited, Cheltenham, is chairman of the conference.

George Cohen's Capital Issue

In order to proceed with schemes of development already approved, to continue to finance their high level of activity, and also to leave themselves in a position to take advantage of the opportunities of profitable business as and when they appear, the directors of George Cohen Sons & Company, Limited, scrap metal merchants, engineers, etc., of Hammersmith, London, W.6, have decided that it will be necessary to raise further finance of a permanent nature. This was announced by Mr. Cyril M. Cohen, chairman and managing director, when he presided at the annual meeting of the company last week. The company has requested permission from the Capital Issues Committee to issue the remaining 500,000 4½ per cent. cumulative preference shares authorised by its articles. Arrangements are being made for the issue to be underwritten and it is the company's present intention to confine the offer of shares to existing shareholders of both classes.

Sir Ellis Hunter's Appointment

Sir Ellis Hunter has been appointed chairman of Dorman, Long & Company, Limited, Middlesbrough, in succession to the late Lord Greenwood. Sir Ellis, who joined the company as deputy chairman in January, 1938, and became managing director in the following year, will combine the offices of chairman and managing director.

JOHN LYSAGHT (AUSTRALIA), PTY., LIMITED, has approved extensions which, it is estimated, will cost about £5¼ million. A four-stand tandem cold-reduction mill and an 80-in. cold-reversing mill, with necessary cut-up lines, annealing equipment and temper mills, are to be installed.

Obituary

MR. STANLEY RITSON, a director of J. H. Ritson, non-ferrous founders, etc., of Gateshead, died recently. He was 58.

MR. ROBERT PROVAN, who died in hospital on September 27, had been with Fishers, Limited, marine engineers, of Paisley, for 35 years.

MR. HERBERT ROBERTS, a director of the Sadi Engineering Company, Limited, Wolverhampton, since 1941, has died at the age of 58.

MR. JOHN EDWARD CHARLES BOYES, managing director of W. J. Boyes & Son, Limited, Diesel engineers, of Peckham, London, S.E.15, died on September 27.

MR. JAMES NICHOLSON, managing director of Nicholsons (Glasson Dock), Limited, shiprepairers and engineers, of Glasson Dock, Lancaster, has died at the age of 75.

MR. MAXWELL SMITH, a member of the engineering staff of Ericsson Telephones, Limited, Beeston, Notts, for many years, died recently. He joined the company in 1914, and in 1920 went to Singapore as assistant manager of Oriental Telephone, Limited. He returned to Ericsson's in 1924. In 1940, Mr. Smith was appointed by the Institution of Electrical Engineers as regional adviser to the Ministry of Labour in connection with the central register of the regional organisation. He was awarded the M.B.E. in 1946.

MR. HAROLD GROUTAGE, who died on September 21, was chief draughtsman of Qualcast, Limited, Derby. He had been employed by the company for 34 years, joining as a patternmaker in 1914. Later that year he joined the Forces, serving continuously until 1917, when he was discharged suffering from the effects of gas warfare. Soon after his return he took charge of the patternshop of Qualcast, Limited, and in 1920-21 he became foreman of the lawn-mower assembly shop. Mr. Groutage was appointed chief draughtsman in 1929. During the second world war he was one of the officers responsible at the outset for the formation of the Home Guard; he was a platoon commander until the time of disbandment. Mr. Groutage was 57 years of age.

Recent Wills

BOWER, SIR PERCIVAL, of Erdington, Birmingham, a member of the Central Electricity Board since 1943, at one time Midlands organiser for the Blacksmiths' and Ironworkers' Society £30,109

THOMPSON, W. S., deputy chairman of Walter Spencer & Company, Limited, steel and tool manufacturers, of Sheffield, and a director of John Guy & Company, Limited, shear manufacturers, of Sheffield £20,566

REAVELL, SIR WILLIAM, founder and managing director of Reavell & Company, Limited, manufacturers of compressors, etc., of Ipswich, president of the British Engineers' Association, 1930-36, and a former president of the Institution of Mechanical Engineers £125,871

THE NATIONAL BRASSFOUNDRY ASSOCIATION is removing its offices to 30, Waterloo Street, Birlmingham, 2, as from October 16. The telephone number (Central 1657) remains unchanged.

Obtaining Goods Under E.R.P.

Board of Trade Statement

The Board of Trade states that a number of inquiries has been received from importers as to the possibility of obtaining goods from the United States under the European Recovery Programme and the procedure that should be followed to obtain such imports. The Board points out that the assistance afforded by the U.S.A. in terms of E.R.P. will, it is hoped, enable the present level of imports to be maintained, but the aid is unlikely to be sufficient to warrant any easement in the present import restrictions; indeed, further reductions in the volume of imports may still prove necessary if prices of raw materials and basic foodstuffs continue to rise.

It is not proposed to alter the existing channels of procurement of imports and accordingly applications for import licences should continue to be made as heretofore to the Import Licensing Department, 189, Regent Street, London, W.1. Where it is decided that it is appropriate to obtain an item on E.R.P. terms, the importer will be so informed and will be notified of any additional formalities required. These will relate in the main to the production of evidence of shipment of a certificate from the overseas supplier and of payment to the overseas supplier so as to satisfy the U.S. authorities that the funds made available by them have been used in the manner intended; certain stipulations regarding the marking of shipments to identify them as E.R.P. cargoes may also be necessary.

Some importers appear to suppose that an import licence will be more readily granted if they can arrange for a transaction to be financed on E.R.P. terms, but this is not the case. It is, therefore, unnecessary for firms to inquire whether goods in which they are interested are so financed or to recommend that they should be. In particular, it should be appreciated that the office of the Economic Co-operation Administration in the United Kingdom is in no sense a procurement agency, and applications and inquiries regarding imports and import licences should not be directed to it.

Changes of Name

The following companies have recently changed their names, the new titles being given in parentheses:—

ATRO TRADING COMPANY, LIMITED, manufacturers of plant and machinery, etc., of London, W.1 (Atro (Cookers), Limited).

LEGE REET & COMPANY, LIMITED, mechanical, electrical and general engineers, etc., of London, S.W.1 (Stone European, Limited).

BURTONWOOD MOTOR & AIRCRAFT ENGINEERING COMPANY, LIMITED, Collins Green, Warrington (Burtonwood Engineering Company, Limited).

FERROUS LIGHT CASTINGS, LIMITED, Wilderspool, Warrington (Ferrous Castings, Limited). On June 29, 1948, Metal Industries, Limited, held 16,500 shares out of 17,750 then issued.

Personal

SIR JAMES GRIGG has been appointed a director of the Westinghouse Brake & Signal Company, Limited.

MR. P. M. RAMBAUT has been appointed a director of Cowans, Sheldon & Company, Limited, engineers, ironfounders, etc., of Carlisle.

MR. H. E. JOHNSON, secretary, has been appointed a director of Dennis Bros., Limited, commercial motor manufacturers, etc., of Guildford, Surrey.

MR. V. G. ATTWOOD and MR. G. LEMARE have been appointed to the board of the Crittall Manufacturing Company, Limited, metal-window manufacturers, etc., of Braintree, Essex.

MR. E. P. PAXMAN, managing director of Davey, Paxman & Company, Limited, engineers, ironfounders, etc., of Colchester, has been elected as the Master of the Worshipful Company of Farriers for the ensuing year.

MR. E. W. SENIOR, chairman and managing director of George Senior & Sons, Limited, forgers and tilters, of Sheffield, has received a presentation from employees of the company to mark his year of office as Master Cutler.

MR. W. W. MACARTHUR, late of Fairey Aviation, Limited, Blackburn Aircraft, Limited, and Sir W. G. Armstrong-Whitworth & Company, Limited, Scotswood, has joined Craven Bros. (Manchester), Limited, as general works manager.

MR. L. S. PETCH, late of Sterling Metals, Limited, Coventry, has been appointed to the board of the Marco Conveyor & Engineering Company, Limited, Leytonstone, London, E.11. He will act as director of the Birmingham branch of the Marco Company.

MR. H. C. HUSBAND, consulting engineer, of Sheffield, has been appointed chairman of the Yorkshire Association of the Institution of Civil Engineers. Mr. Husband's father, Prof. J. Husband, formerly of Sheffield University, held the same office 21 years ago.

MAJOR FRANK BLACKSTONE has been appointed a director of Blackstone & Company, Limited, manufacturers of Diesel engines, etc., of Stamford, Lincs. Major Blackstone is the son of a former chairman of the company and a member of the third generation of the family to serve on the board.

DR. FREDERICK M. BRUCE, head of the high-voltage laboratory of the Nelson Research Laboratories (Stafford) of the English Electric Company, Limited, has been appointed Professor of Electrical Engineering at the Royal Technical College, Glasgow, in succession to PROF. S. PARKER SMITH, who has retired.

MR. H. V. SHELTON has been appointed chairman of the British Ironfounders' Association, the National Light Castings Ironfounders' Federation, and the British Bath Makers' Association, Limited, to fill vacancies caused by the recent death of Mr. W. R. Blair. Prior to his appointment, Mr. Shelton was deputy chairman of the first and last and acting chairman of the second organisation.

Richard Crittall & Company

Creditors Give a Month's Moratorium

At a meeting last week of creditors of Richard Crittall & Company, Limited, heating and ventilating engineers, etc., of Brentford, Middx, it was disclosed that there were about 1,500 creditors who were owed £1,316,000 and against this there were assets of only £879,000.

The new chairman of the company (Mr. H. V. Cozens) said that there was something like a million and a quarter pounds of overdraft with the various banks. If the creditors were determined to apply for a compulsory winding up of the company, it was his considered opinion that out of the chaos they would receive nothing, but, if they stayed their hand until after the annual general meeting when the new board would have a reconstruction scheme to put before the shareholders, he was satisfied quite an amount could be saved out of the wreckage. The creditors voted unanimously that there should be a moratorium for one month.

The creditors were told that at present the companies remaining were Richard Crittall & Company, Limited, and the wholly-owned subsidiaries—Richard Crittall Marine, Limited; Magnetic Valve Company; Grierson, Limited; N. V. Stralingswarmte; Richard Crittall Stralingswarmte. Twelve subsidiary companies had been or were in process of being liquidated. There were orders in hand valued at £1,700,000.

Contracts Open

The dates given are the latest on which tenders will be accepted. The addresses are those from which forms of tender may be obtained.

Bournemouth, October 13—Supply of buoys, chain, cast-iron sinkers, swivels, and shackles, for the Borough Council. The Borough Engineer, Town Hall, Bournemouth.

Cradley Heath, November 5—Provision and laying of about 1,760 yds. of 9-in. to 21-in. dia. cast-iron and concrete pipe sewers, for the Upper Stour Valley Main Sewerage Board. Mr. G. P. Deeley, engineer, 13, Church Street, Stourbridge. (Fee £5 5s., returnable.)

Kincardine, October 16—Supplying and laying of about 2,500 yds. of 4-in. dia. spun-iron piping, etc., for the County Council. Crouch & Hogg, engineers, 17, Woodside Crescent, Glasgow, C.3.

South Africa, October 21—Supply of 30 metal rectifiers, for the Union Tender and Supplies Board, Pretoria. The Export Promotion Department, Board of Trade, Room 1073, Thames House North, Millbank, London, S.W.1. (Reference, E.P.D. 40860/48.)

EVERED & COMPANY, LIMITED, Smethwick, has purchased the business of F. G. Burgin & Company, Limited, Birmingham, and is now manufacturing and distributing the full range of "Fabex" compression joints, copper tubes, etc. Future correspondence intended for Messrs. Burgin should be addressed to Evered & Company, Limited, Surrey Works, Smethwick, 40.

News in Brief

AN OVERHEAD CRANE was damaged when fire broke out in the heat-treatment department of the Sheffield Forge & Rolling Mills Company, Limited.

EMPLOYEES OF F. H. Lloyd & Company, Limited, steelfounders, etc., of Walsall, paid a visit to London on September 18 for their annual outing.

THE FIRST ALUMINIUM BRIDGE to be built in England will be officially opened by Mr. Alfred Barnes, Minister of Transport, at South Dock, Sunderland, on November 26.

TINSLEY (INDUSTRIAL INSTRUMENTS), LIMITED, has removed from South Norwood, London, S.E.25, to North Circular Road, West Twyford, London, N.W.10 (telephone: Elgar 6081).

SMITH'S DOCK COMPANY, LIMITED, North Shields, has received orders for three steam trawlers for the Devon Fishing Company, Limited, and three for the Northern Fishing Company (Hull), Limited.

CLAIMED TO BE the largest in the world, a 280-ton lathe was despatched by road from the Felling (Gateshead) Works of Noble & Lund, Limited, to Vickers-Armstrongs, Limited, Barrow, last week.

J. H. FENNER & COMPANY, LIMITED, manufacturers of belt drives, hydraulic leathers, etc., announces that its central purchasing division is now at its new factory at Marfleet, Hull (telephone: Central 33802).

PRESENTATIONS have been made to eight employees of W. & T. Avery, Limited, manufacturers of weighing machines, etc., of Birmingham, to mark their completion of 50 years' service with the company.

A MINISTRY OF SUPPLY announcement states that the Combined Tin Committee has made final allocations for the second half of 1948 amounting to 11,980 long tons, which makes a total for the period of 43,590 tons.

MOULDERS OF THE Atlas Steel Foundry & Engineering Company, Limited, Armadale, West Lothian, who have been idle for about six weeks due to a grievance about overtime rates, resumed work on September 27.

AFTER AN all-day hearing on September 27, Falkirk Valuation Appeal Court reduced the gross annual valuation of the David's Loan Works of the British Aluminium Company, Limited, from £47,000 to £32,216.

ELEVEN EMPLOYEES and pensioners of Marston Excelsior, Limited (a subsidiary of Imperial Chemical Industries, Limited), radiator manufacturers, etc., of Wolverhampton, have received presentations in recognition of their long service with the company.

SWAN, HUNTER & WIGHAM RICHARDSON, LIMITED, Wallsend, has received an order for a 15,000-ton tanker for Norwegian owners. Another Norwegian order for a tanker of 24,500 tons dw. has been received by Vickers-Armstrongs, Limited, Walker-on-Tyne.

SIR HARRY RAILING, chairman of the General Electric Company, Limited, states in the company's annual report that exports have created a record considerably in excess of the Government's target figure. The number of employees at March 31, 1948, was approximately 52,400.

THE U.S. DEPARTMENT OF JUSTICE has filed a Court action designed to force the Aluminium Company of America "to reduce its power and size." The proceedings, said the Attorney-General, were in an effort to carry out a monopoly judgment entered against the company in 1945.

AN ORDER WORTH £600,000, covering 300 vehicles of various types, has been received by Leyland Motors, Limited, from the Argentine. It is believed to be the largest single post-war South American order placed with one British manufacturer for Diesel-engined heavy-duty goods vehicles.

THOS. W. WARD (INDIA), LIMITED, Bombay, is to handle the sales in India and Pakistan of most of the products of the Fordath Engineering Company, Limited, West Bromwich. "Glyso" core oils, compounds and binders and the Fordath multiple rotary core machines are included in the arrangement.

THE MINISTRY OF FUEL AND POWER has issued an appeal to industrial and other undertakings owning auxiliary electrical generating plant to use it to relieve the public supply at least during the hours from 8 a.m. to 12 noon and 4 to 5.30 p.m. from the beginning of this month to the end of March.

A BENDING MACHINE weighing 110 tons is at present being completed by Joshua Bigwood & Son, Limited, Wolverhampton. The machine, which is to be sent to Sweden, is capable of bending stainless-steel sheets 22 ft. long by 1 in. thick into cylinders to be used for pressure vessels in a large chemical plant.

A DISPUTE BETWEEN THE Amalgamated Engineering Union and the Boiler Makers' Society over a division of work at the Ebbw Vale Works of Richard Thomas & Baldwins, Limited, has been settled after the intervention of the Ministry of Labour. The dispute arose over the question of which men should do machine welding.

MR. THOMAS F. TURNER, chief purchasing agent of the English Electric Company, Limited, the retiring national chairman, reported a year of record activity when he addressed members of the Purchasing Officers' Association at their annual conference at Cheltenham. The Association now has 19 branches and groups, with a membership of over 1,600 practising industrial and governmental purchasing officers.

AN ORDER FOR A 5,000-line automatic telephone exchange to be supplied to Singapore has been received by the General Electric Company, Limited. The new exchange will supplement an exchange supplied in 1930 for 6,600 lines increased in 1939 to 9,000 lines. The company has also received an order from the Electricity Commission of Victoria, Australia, for the supply of power line carrier telephone equipment.

HUSBAND & COMPANY, consulting civil and structural engineers, of Sheffield, has opened a London office at 70, Victoria Street, S.W.1 (telephone: Victoria 6418), which will be under the direction of Mr. W. A. Mitchell, formerly chief designer in London of Dorman, Long & Company, Limited. Husband & Company also announces that it has acquired the consulting practice of the late Mr. A. S. Grunspan, and will act as his successors, with effect from August 3, 1948.

Increases of Capital

Details of increased capital have been announced by the following companies:—

MODERN HARDMETALS, LIMITED, Sheffield, increased by £1,000, in £1 ordinary shares, beyond the registered capital of £1,000.

PAR-RIGHT, LIMITED, stove manufacturers, etc., of Southampton, increased by £4,000, in £1 ordinary shares, beyond the registered capital of £2,000.

TALPORT FOUNDERS & ENGINEERS, LIMITED, Ystradgynlais, Brecon, increased by £4,500, in £1 ordinary shares, beyond the registered capital of £500.

SCRUTTON ERECTION (HULL), LIMITED, engineers and contractors, etc., increased by £750, in £1 ordinary shares, beyond the registered capital of £750.

AUTO COMBUSTION (LONDON), LIMITED, engineers, etc., of London, S.W.9, increased by £18,000, in £1 ordinary shares, beyond the registered capital of £2,000.

J. H. PERRY & SON (LYE), LIMITED, hollow-ware manufacturers, galvanisers, etc., increased by £6,000 in £1 ordinary shares, beyond the registered capital of £6,000.

AIR POWER, LIMITED, manufacturers of compressed-air plant, etc., of Heybridge, Maldon, Essex, increased by £4,900, in £1 shares, beyond the registered capital of £100.

H. S. CATTERMOLE & COMPANY, LIMITED, chartered mechanical engineers and consultants, etc., of Birmingham, increased by £2,000, in £1 shares, beyond the registered capital of £1,000.

GEORGE OAKLEY & COMPANY (MARKET DRAYTON), LIMITED, agricultural and general engineers, etc., increased by £2,000, in £1 preference shares, beyond the registered capital of £5,000.

KEY ENGINEERING COMPANY, LIMITED (formerly "K" Engineering Company, Limited), London, E.C.4, increased by £10,000, in £1 ordinary shares, beyond the registered capital of £12,000.

HIGHAM FOUNDRY & ENGINEERING COMPANY (HIGHAM-ON-THE-HILL), LIMITED, increased by £2,000, in 500 preference and 1,500 ordinary shares of £1 each, beyond the registered capital of £1,500.

CHRISTY BROS. (CHELMSFORD), LIMITED, mechanical and electrical engineers, etc., increased by £100,000, in 50,000 ordinary and 50,000 5 per cent. cumulative irredeemable preference shares of £1 each, beyond the registered capital of £100,000.

Power for Highlands Industries

The Scottish Council (Development and Industry) is seriously concerned by the rapid and substantial increases in the capital costs of the hydro-electric developments in Scotland; it is felt that these are bound to be reflected in the cost of the power to be made available. Sir Steven Bilsland, Bt., chairman of the Council, announced last week that the Council is submitting to the Government a scheme to ensure that electro-chemical and electro-metallurgical industries which may establish themselves in the Highlands will get the power they require at a cost low enough to enable their products to compete in world markets.

Scrap Metal Needs at Peak

German Imports Insufficient

"Never have our needs for scrap iron and steel been greater than they are at this moment of international tension and great difficulties so far as our international trade situation is concerned," said Mr. J. W. Belcher, Parliamentary Secretary to the Board of Trade, when he opened a salvage drive in Birmingham on September 27. He continued: "We are having to face the probability of a measure of rearmament, and that is an additional and pressing reason for turning out our iron and steel scrap."

Mr. Belcher said that imports of scrap from Germany were insufficient to keep stocks at a safe level. To meet a steel output figure of over 15,000,000 tons a year it was necessary to increase the collection and supply of usable scrap, not only for the period of the drive, but to maintain it at a steadily increasing tonnage.

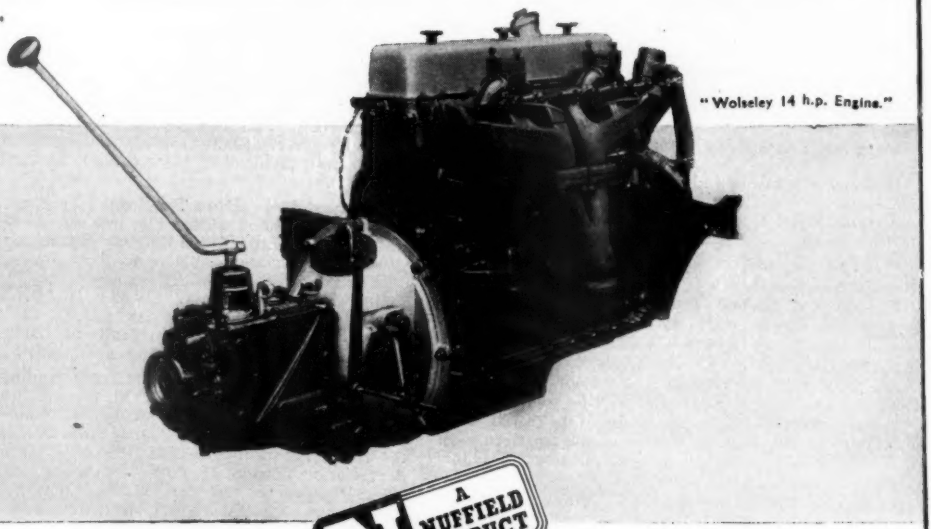
Scrap supplies were also referred to by Mr. G. R. Strauss, Minister of Supply, when he addressed a Press conference in London. He said that it looked as though there would be enough to sustain current steel output for the next few months. But the situation next year was doubtful. The flow from the home scrap campaign might decline during the winter.

A.E.C. Accounts Delayed

An expected delay in the publication of the accounts for the year to September 30 of the Associated Equipment Company, Limited, has been notified to stockholders. The directors' meeting normally held in November to consider the dividend will not be held until later. The annual general meeting, held on December 8 last year, will not be held until early in 1949 with a corresponding delay in the payment of dividends. The reasons for the delayed accounting are the recent reorganisation of the company and the need for consolidated accounts imposed by the new Companies Act.

Resolutions covering the reorganisation were passed at the extraordinary general meeting on September 24. The company thus changes its name to Associated Commercial Vehicles, Limited, and becomes a holding concern. Its manufacturing business and assets are assigned to a subsidiary, A.E.C., Limited, the capital of which has been increased from £1,000 to £5 million. The reorganisation follows the acquisition of Crossley Motors, Limited, and the Maudslay Motor Company, Limited.

KEENOCK COMPANY, LIMITED, manufacturers of grinding and mixing machinery, of Stratford, London, E.15, announces that arrangements have been completed for Vickers-Armstrongs, Limited, to acquire the business as a going concern. Arrangements were made in September, 1946, for Vickers-Armstrongs to acquire the share capital, and the present move is intended to simplify the organisation.



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Company News

(Figures for previous year in brackets.)

Glynwed Tubes—Interim dividend of 12½% (same).

F. McNeill & Company—Interim dividend of 10% (same).

Steddall & Company—Interim dividend of 7½% (same).

Telegraph Condenser Company—Interim dividend of 5% (same).

Imperial Chemical Industries—Interim dividend of 3% (same).

Premier Metal Company of South Africa—Dividend of 12½% (same).

W. E. Hughes & Company—Interim dividend of 10% on larger capital (10%).

Ransomes & Rapier—Interim dividend of 2%, tax free (same), on the ordinary shares, and of 1%, tax free, on the new ordinary shares.

Sheffield Forge & Rolling Mills Company—Final dividend of 10%, making 15% (same) and capital distribution equal to 8d. per share (nil).

William Baylis—Net profit to July 31, £6,120, after providing £5,000 for metal reserve (against £6,578); dividend of 12½% (same); to general reserve, £1,000 (same); forward, £6,607 (£5,611).

Radiation—Interim dividend of 5% (no interim, single payment of 12½%). The directors state that the payment of an interim should not be taken as an indication that the rate for the year 1948 will be increased beyond the rate for 1947.

Clifford Motor Components—Net profit to March 31, £91,709 (£62,868); to provision against decrease in value of investments in subsidiaries, £50,000 (nil); general reserve, nil (£15,000); benevolent fund, £1,538 (£5,000); final dividend of 22½%, making 30% (same); forward £48,001 (£47,100).

Simms Motor Units—In view of increasing expenditure, the directors consider it prudent to defer payment of the half-yearly deferred dividend, due September 30, until trading results for 1948 are known. This should not be taken as an indication of deterioration in the company's position.

Ransome & Marles Bearing Company—Net profit for the year ended June 30, after tax, depreciation, etc., £286,548 (£205,959); dividend of 20% (same) and bonus of 5% (same); to general reserve, £142,414 (£115,000); pension fund, £40,000 (nil); directors' remuneration, £3,000 (same); forward, £84,641 (£79,757).

Richards Bros. & Sons (1946)—Trading profit for the year ended April 30, £89,509 (£85,770); to depreciation, £4,102 (£3,166); directors' remuneration, £5,640 (£6,450); auditors' fees, £240 (£160); tax, £36,635 (£53,000); net profit, £42,892 (£22,994); to preference dividend, £2,292 (nil); final ordinary dividend of 15%, making 35%; forward, £32,519 (£9,794).

William Doxford & Sons—Profit for the year to June 30, £362,174 (£231,843); to taxation, £170,000 (£100,000); over-provision in previous years, £28,000 (E.P.T. recovered, £50,000); general reserve, £50,000 (same); plant extensions and renewals, £80,000 (£20,000); final dividend of 10% and bonus of 5%, making 20% (same); forward, £73,634 (£74,710).

Crossley-Premier Engines—Gross trading profit for the year to April 30, £102,699 (£46,163); sundry revenue, £1,238 (£10,996); to directors' remuneration, £6,087 (£2,900); staff pensions, £1,384 (£1,309); tax, £48,500 (£19,800); audit fee, £157 (same); depreciation, £11,358 (£12,824); net profit, £36,451 (£20,169); to general reserve, £8,000 (£6,500); staff pension reserve, £1,000 (nil); dividend of 12½% (same); forward, £37,801 (£23,481).

Vaughan Bros. (Drop Forgings)—Trading profit to June 30, £114,564 (£58,358); interest, £147 (same); E.P.T. repaid, £10,907 (£3,726); to depreciation, £7,228 (£7,286); depreciation relative to fixed assets, disposed of, £7,804 (nil); directors' remuneration, £9,455 (£7,918); audit, £315 (same); tax, £39,883 (£22,076), leaving £60,934 (£24,636); to future tax, £35,000 (nil); general reserve, £5,000 (same); dividend of 20% (same); forward, £29,706 (£26,566).

W. H. Dean & Son—Profits from trading for the 53 weeks to August 18, £127,530; income from investments, £2,333 (£2,098); to depreciation, £6,669 (£4,785); to directors, £6,944 (£5.000); profits tax, £18,442 (£13,125); net profit, £97,808 (£96,542); from special depreciation account, £33,300; to income tax, £43,872 (£41,346); general reserve, £53,300 (£20,000); dividend equalisation, £10,000 (same); final dividend of 40%, making 50% (same); forward, £24,000 (£23,714).

Kay & Company (Engineers)—Consolidated accounts show:—Trading profit to May 31, £153,549; investments income, £827; to directors' remuneration, £5,900; auditors' remuneration, £131; depreciation, including £7,500 to plant renewal reserve, £17,360; income tax, £59,101; other tax, £18,800; other tax for earlier periods, £9,173; net profit, £43,911; unappropriated profit, £21,626; to employees' fund, £1,000; general reserve, £22,012; written off goodwill, £5,000; dividend of 20%; forward, £25,422.

Crossley Bros.—Gross trading profit before depreciation, for the year ended April 30, £254,630 (£232,931); sundry income, £25,232 (£20,850); to depreciation, £42,172 (£36,056); staff superannuation and pensions, £10,791 (£9,844); taxation, £117,253 (£156,479); net profit, £108,146 (£49,902); to general reserve, £15,000 (£10,000); taxation allowances equalisation reserve, £15,000 (nil); dividends on preference, preferred ordinary and deferred 12½% (same), aggregating £42,170 (£37,221); forward, £84,104 (£48,128).

General Electric Company—Trading profit for the year ended March 31, £3,893,877; investment income £638,778; to depreciation, £510,226; to directors, £123,724; pensions, £169,219; audit, £7,763; unascertained liabilities, £178,886; net balance £3,542,837; to profits tax, £519,435; income tax, £1,544,539; net profit, £1,478,863; brought in, £986,859, plus £11,414 net provisions no longer required; available £2,477,136; to preference dividends, £185,350; against future stock depreciation, £780,000; to plant replacement reserve, £31,439 net; ordinary distribution, £404,093; forward, £1,076,254.

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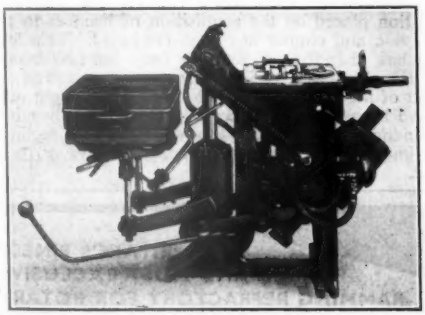

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Raw Material Markets

Iron and Steel

The light foundries continue to hope that the supply of high-phosphorus pig-iron will be increased in the near future. This could be achieved by changing over a furnace from basic to foundry iron and, if the reported improvement in the supply of basic pig-iron is correct, this reversion may be possible. The present output of high-phosphorus iron is far short of requirements and users find it impossible to place their licensed tonnages. This can only result in curtailed production. General engineering, jobbing and speciality foundries are busy with orders both for home use and export and, while they are not tied to one type of iron, as in the case of the light foundries, they are not finding it easy to obtain the required tonnage. Fortunately, supplies of refined iron are fairly easy, and ferro-alloys, too, can be obtained without much difficulty. Ganister and limestone can be procured at short notice, but cupola firebricks are only offered for belated deliveries, as stocks are not available. The supply of foundry coke keeps up to the allocated tonnages and most foundries have been able to build up small stocks.

Sheetmakers are maintaining constant pressure for sheet bars, and small billets are still urgently needed by the re-rollers of light sections. British steelmakers are well aware of the need for semis to keep the re-rolling mills in regular operation and recent deliveries of blooms, slabs and the larger sizes of billets have been on an impressive scale. All sorts of defective material and scrap are being pressed into use wherever possible, but the shortage of small billets and wire rods has not been overcome; users are hoping that these will figure conspicuously in the consignments of steel which are coming in from Belgium and Luxemburg.

Having reached Period IV, many industrialists are pressing for prompt deliveries of finished steel under the new allocations. The lighter sizes of plates are keenly sought and heavy steel plates are also wanted in impressive tonnages, both for home use and for export. A world-wide shortage of railway material ensures full employment both for the rail mills and also for the makers of axles, points, crossings, fishplates, etc. Colliery requirements, which are very extensive, are accorded special priority and there is a keen demand for joists, channels and sections. Most impressive of all is the call for black and galvanised sheets. Price seems to be no object and there are numerous applications for export licences.

Non-ferrous Metals

The Control of Non-ferrous Metals (No. 32) (Copper, Lead and Zinc) Order, 1948, raises the maximum prices of copper, lead and zinc products with effect from October 1. The Ministry of Supply, in announcing the revised prices, states that the changes are due to increases in the cost of imported supplies. The new maximum prices, per ton, are:—Electrolytic copper, £140 (an increase of £8); good soft pig-lead, £112 (£22); good ordinary brand zinc, £92 (£17); zinc sheets, £104 (£17); zinc oxide (white seal), £89 15s. (£14 5s.).

The Minister of Supply has also announced that, as from October 1, the price of virgin aluminium in ingot form is increased from £80 to £87 per long ton, delivered into consumers' works, with an addition of £2 10s. per ton for metal in notch bar form. The new price will apply to metal of a purity of 99-99.5 per cent. inclusive, and the existing premiums for higher purities will be payable in addition, as follows:—Minimum 99.6 per cent., £8; 99.7 per cent., £12; 99.8 per cent., £17; 99.9 per cent., £50; 99.99 per cent., £100.

Little exception can be taken to the new levels other than in the case of copper, which is now nearly £10 over the world figure, as represented by the United States quotation. An increase in the price of lead has been expected for months and the new figure of £112 per ton, although very high by pre-war standards, is about in line with what must be paid in order to secure supplies. The new price for zinc appears to favour the Ministry of Supply more than it does the United Kingdom consumer and this will doubtless occasion adverse criticism from the trade. There are likely to be complaints also about copper. The adjustment in aluminium is comparatively modest. No increases have been announced in scrap, as zinc alloy scrap, fuse scrap and S.A.A. brass cases are no longer available at fixed prices as per the Ministry schedule. Instead, any stocks or arisings in the future will be offered for sale through the medium of competitive tender.

In addition to these price changes the unpopular restriction placed on the acquisition of licences to purchase zinc and copper has been rescinded. This legislation has, therefore, functioned only for two months, but its withdrawal will cause no regret and the verdict of the trade will doubtless be that it ought never to have been imposed, especially at a time when business in non-ferrous metals showed signs of declining. The limitation on the use of copper, however, is retained.

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